THE DESIGN OF VEGETABLES AND FRUITS FLASH CARDS IN THAILAND AND ENGLISH FOR THE PEOPLE WITH VISUAL DISABILITIES AT THE AGE OF 5-8 YEARS

Weera Chotithammaporn,[*] **Pratoomtong Trirat**[**], **Sarawut chamkuntod**[**]

Department of Printing Industry Faculty of Industrial Technology, Suan Sunandha Rajabhat University,

Bangkok, Thailand,
E-Mail: weera.ch@ssru.ac.th

**Mass Communication Technology Rajamangala University of Technology Thanyaburi, Pathum Thani*
E-Mail: pratoomtong_t@rmutt.ac.th

ABSTRACT

The purposes of this study were to design Thai and English vegetables and fruits flash cards for the people with visual disabilities at the age 5-8 years and to study satisfaction of the flash cards. The test was to collect data, design the cards and then study satisfactions by taking the questionnaires to the samples. The samples were 30 students from Thanmikwittaya School in Petchaburi province. The satisfaction measure tools were evaluation 5 levels, statistic using percentage, average and standard deviation.

Educational process to study the design of Thai and English vegetables and fruits flash cards for the people with visual disabilities at the age 5-8 years was to create the flash cards size 15x20 cm and letter size 52 points The pictures in flash cards were used 3D embossed ink drawing by hands follow the lines and equipped with Braille. There were 22 pages in a set then brought the cards to kindergartner and students in grade 1-3 to read to acknowledge learning. The evaluation shows that texture and Braille understanding of the design of Thai and English vegetables and fruits flash cards for the people with visual disabilities at the age 5-8 year is in high level. The students with visual disabilities' satisfaction is in high level $\bar{x}$ = 2.72, S.D. = 0.14, and also similar to the specialists' satisfaction $\bar{x}$ = 4.35, S.D. = 0.24.

Keywords: Design, Flash cards, Visual Disabilities

INTRODUCTION

Reading makes a full man" said English philosopher Francis Bacon. This saying shows the importance of books and its great impact on self-development for individuals. However, one of the main obstacles of reading books is visual disorders. Although Louis Braille have created braille for the blind to use since 150 years ago, the user still experience many limitations in practice such as size of the book as the braille book is usually so large which makes it difficult to carry around and the price of the book which is too expensive for some people. Blindness is a group of disability people with visual impairment from the level of completely blind or partially blind. These people recognize their surroundings by perceptions of sound, shapes, shape surfaces, and the size of the object by using the fingertips to touch. Therefore, media and technology that promote a proper learning often use media with embossed or higher contact surface, such as Tactile Texture. Tactile Texture is a tool for communication for people with visual disabilities to recognize the shape, character, structure and range of nature and man-made things in order to have a vision while touching to create the imagination with principles. Tactile Texture media must help enhancing people with visual impairment to understand more and able learn as much as the normal people (Thongyoi Chiang Thong, 2008: 3).

Moreover, Mr. Montien Boontan, President of the Association of the Blind in Thailand said that "The factor that determines whether people with visual disabilities are equal to the general people is the access to information and news which 95% of the information that the blind cannot access is print media." For the blinds, acknowledgment of news, content and entertainment is limited because they can hear but not read or see. Many good books are published in both Thai and English language. Although there is methods to help the blind to access printable

information more nowadays, such as braille books, audio books for the blind, and volunteers helping with media production, however it is still not enough to meet the needs for the blinds (Montien Boonton, 1999). Tactile texture illustrations with braille creates better perception which is consistent with Kantana Insar's research named "Himmapan Creatures - the Tactile Texture Designed for the Blind" found that the touch of the embossed image without the use of braille could not create imaginary pictures. The use of braille with tactile texture images will create a better understanding and creation of imagination. From the mentioned reasons and to study the type of print media that can be used for the blind's teaching and learning which could be another learning channel for the blind. The instructor and the blind can use this to develop their potential to have more knowledge and ability.

OBJECTIVE

1. To design print media in the form of flash card for teaching the blind
2. To study flash card satisfaction of experts and the blind

METHODOLOGY

This research is a research development with the following steps

1. **The data preparation process** dividing into perception and information learning of the blind and information on print media design in print media and flash card.

2. **Printing process for the blind up** visiting a site which in need of teaching media for Thanmikwittaya School in Phetchaburi province.

3. **The study of print media satisfaction from teachers** The designers adapt, design, and study the opinions of blind students of Thanmikwittaya School in Phetchaburi province.

RESULTS

The results of the braille and illustrations design for the people with visual impairment.

Designing of vegetables and fruits flashcards in Thai and English for the people with visual impairment aged 5-8 will receive a word card that can be used as a medium to learn. The flashcards are 15 x 20 cm with 52-point text size. The images in the flashcards use 3D embossed ink drawn along the lines that we designed using hand-drawn drawings. There are 22 flashcards. Braille is attached to the flashcards, printed in transparent A4 paper with 36-point text sixe which creates vegetables and fruits flashcards in Thai and English for the people with visual impairment aged 5-8 as follows:
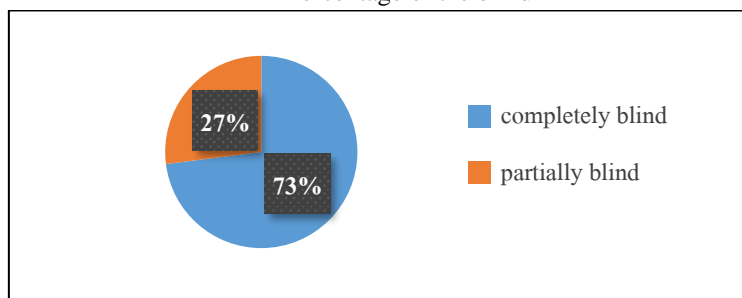
Figure 1
1-6 Braille flashcard
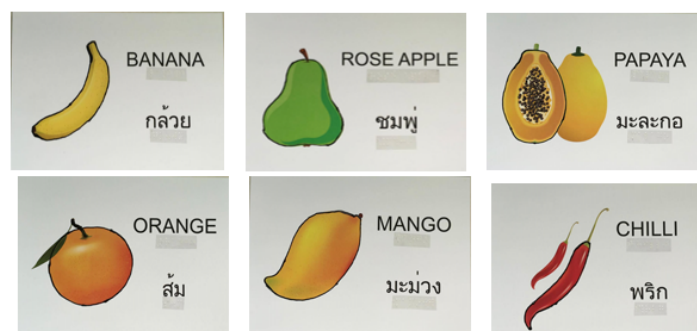
The results of the satisfaction of braille photobook design for the people with visual impairment. Composition of designing vegetables and fruits flashcards in Thai and English and comprehension of braille at Thanmikwittaya

School in Phetchaburi Province under the Dhamma Foundation for the Blind in Thailand under the royal patronage which consists of 30 people .

Figure 2
Percentage of the blind

According to figure 2, the percentage of the blind answering the questionnaire is mostly completely blind (22 people) which is accounted for 73% and partially blind (8 people) which is accounted for 27% respectively.

Table 1

Satisfaction of the composition in creating vegetables and fruits flashcards in Thai and English and comprehension about braille.

Evaluation list	$\bar{x}$	S.D.	level
1. The appropriateness of materials usage in the original production	3.80	0.41	High
2. Understanding of the relationship between using illustrations and braille descriptions	3.26	0.44	Medium
3. Convex sharpness, embossment, concavity of the image, appropriateness of images	3.24	0.49	Medium
4. Meticulousness in original production	3.22	0.46	Medium
5. Placing images and Braille content that is suitable for the glossy paper	3.31	0.50	Medium
6. Creativity to create new media for the people with visual impairment	3.76	0.44	High
7. Braille is accurate	3.48	0.51	Medium
8. Interesting content in the flashcard	3.64	0.49	High
9. Useful and motivating to enable learning for the people with visual impairment	3.68	0.48	High
10. Strong and durable material	3.84	0.37	High
11. Appropriate flashcard size	3.51	0.00	High
Mean	3.52		High

Table 2

Satisfaction of the composition in creating vegetables and fruits flashcards in Thai and English and comprehension about braille

Evaluation list	$\bar{x}$	S.D.	Level
1. The appropriateness of materials usage in the original production	4.6	0.55	High
2. Understanding of the relationship between using illustrations and braille descriptions	4	0.71	High
3. Convex sharpness, embossment, concavity of the image, appropriateness of images	3.6	8.89	High
4. Meticulousness in original production	4.2	0.45	High
5. Placing images and Braille content that is suitable for the glossy paper	4.2	0.45	High
6. Creativity to create new media for the people with visual impairment	4.2	0.84	High
7. Braille is accurate	4.8	0.45	High
8. Interesting content in the flashcard	4	0.71	High
9. Useful and motivating to enable learning for the people with visual impairment	4.4	0.55	High
10. Strong and durable material	4.8	0.45	High
11. Appropriate flashcard size	5	0.00	High
Mean	4.35		High

CONCLUSION

According to the results of the satisfaction study of blind students and experts, the summary of the evaluation is the quality of characters is the highest, the illustrations are appropriate, the media is interesting, and braille is at a high level which is consistent with the research of BC Sköld - 2007 which is about the braille and illustrations. Blind children are lack of the awareness from seeing by the eyes, thus the touch of these children gives them the enjoyment of touch and perception. Illustrations with braille play an important role in developing reading skills by touching to be able to develop recognition skills since young age to develop other skills while acknowledging the photos. The selection of illustrations for children starts from the environment and (Fellenius and Eriksson 2006) says that illustration for the book of the blind by touching is 2 functions: 1) presenting various stories through pictures 2) adding various details that is not include in the story. Kennedy (1992, 1996) studied that drawing of the blind is caused by alliteration which shows that the touch can be transmitted as well as other data transfers. Kerstin Fellenius, a researcher at Stockholm College of Education, said that it is important that blind children receive opportunities in braille alliteration as soon as possible since the blind children cannot see the printed word.

SUGGESTION

1. Design of printed media can create more communication channels by using interactive voice and audio on printed media.

2. Concepts of print media books designing for the blind can be applied to other media design subjects and to create embossed images can be used to create screen printing techniques to increase exposure in learning from images in order to make the learning of the blind more effective for greater understanding.

SUGGESTION FOR FURTHER RESEARCH

1. Study by adding variables of dependent variables according to the aspects of learning achievement in order to see the effectiveness of the media that can help learners to have more knowledge or not.

2. There should be a study of the content of media production that is suitable for each type of media in order to enable teachers to apply research results in media production.

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REFERENCES

[1] Blind people in Thailand Nationals, 2011 (online) accessible from http://www.cfbt.or.th/phetchaburi/gallery

[2] Chantana Insap, 2012 Himmapan Creatures "The Tactile Texture Designed for the Blind Research Report, Faculty of Fine Arts Suan Sunandha Rajabhat University

[3] Thongyoi Chiang Thong. (2008). Creating innovative tactile texture media with a physical activity in learning. Physical education teaching for visually impaired students. Thesis, Master of Education, Physical Education, Srinakharinwirot University.

[4] Pattaya Jai Chaem. (2007). The construction of computer assisting on the science teaching about water of students with visual impairment

[5] Montien Boon Ton. Blind Path to higher education. Bangkok The Blind Association of Thailand 1999

[6] Montien Satwatee. (2004). Embossed Mold for learning materials for the visually impaired. Mathematics case study of Grade 3

[7] Manetkop Namphet. (2005). Basic learning of tactile texture media for the blind "the development of embossed images with screen printing".

[8] Ratthasiri Sukahut, Thai and English text translation program to Braille, 2010 (online) accessible from

[9] Synchrotron Light Research Institute (Public Organization), Bell letters, 2016 (online) accessible from http://cpe.eng.kps.ku.ac.th/db_cpeproj/fileupload/project_IdDoc92_IdPro91.pdf

[10] Stories of the visually impaired, 2016 (online) accessible from https://sites.google.com/a/g.swu.ac.th/seiyng-thi-mxng-hen/home/reuxng-raw-khxng-phu-phikar-thangkar-mxng-hen

[11] Synchrotron Light Research Institute (Public Organization), Bell letters, 2016 (online) accessible from http://www.slri.or.th/en/index.php?option=com_content&view=article&id=361&Itemid=364

[12] Kennedy, JM (1992) Chantana In Sa, (2012) Himmapan Creatures "The Tactile Texture Designed for the Blind Research Report, Faculty of Fine Arts Suan Sunandha Rajabhat University

[13] Krairop Charoensopa, (2018) Wat Ploysri (Production of Varnish with Coconut Oil-Based for Environment, The Journal of Industrial Technology : Suan Sunandha Rajabhat University. Volume 6, Number1.